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CHIRONOMID MIDGES OF CALIFORNIA.

I. CHIRONOMINAE, EXCLUSIVE OF TANYTARSINI  
(=CALOPSECTRINI)

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The nonbiting midges of the family Chironomidae occurring in California have been reviewed by Wirth and Stone (1956). Only the Clunioninae (Wirth, 1949) and the Tendipedini (Townes, 1945) have been adequately treated. The Chironominae exclusive of Tanytarsini are dealt with here. Of the 71 species of Chironomini reported here as occurring in the State, 47 were not previously listed. The Tanytarsini of California will be incorporated in a revision of the Nearctic species which I now have in progress. A projected second part to this paper will include the remaining subfamilies exclusive of Clunioninae.

Genitalia mounts were made of all male specimens studied. The genital capsule, after KOH clearing, was mounted in "Permout," a synthetic mounting resin, on a small celluloid strip following the technique used by workers in the British Museum (Natural History). The technique was modified by using a cover glass on the mount. The celluloid strip was then pinned under the locality label on the specimen pin. In some instances accessory slides were made of antennae and legs.

The terminology of wing venation used follows Townes (1945) for consistency although Freeman (1955) favors the Tillyard modification of the Needham-Comstock system.

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While measurements of size (especially wing length) and various body ratios have been utilized in species descriptions, in many instances they are of little diagnostic value because of inadequacy of sample size in the original description. For example, Townes (1945) averaged only three measurements of each characteristic of each species. While admitting its inadequacy from the standpoint of population statistics, a compromise was effected here by measuring a minimum of three specimens (where available) from each locality and date for each species; thus both seasonal and geographic variations are included. For each series of measurements the range is given, followed by the mean with the number of specimens upon which the statistic is based given in parenthesis.

The nomenclature is essentially that used by Townes (1945) but with some modifications as given by Freeman (1957, 1958) in his recent monographic series on African midges. A summary of the changes incorporated here is given by Dendy and Sublette (1959).

This paper is based on four of the larger collections of California Chironomidae. For making them available, I thank Dr. J. N. Belkin, Department of Entomology, University of California, Los Angeles; R. E. Darby, formerly a graduate student at the University of California, Davis, now at the Life Sciences Department, Sacramento State College, Sacramento, California; Dr. A. T. McClay, University of California, Davis, and Dr. W. W. Wirth, U.S. Department of Agriculture, Washington, D.C.

The holotypes and material collected by Dr. Wirth are deposited in the U.S. National Museum. The deposition of specimens is indicated in parenthesis immediately after locality and collector. The names of the following collectors have been abbreviated in the text as follows: Willis W. Wirth (W), R. E. Darby (D), J. N. Belkin (B) and A. T. McClay (M). Location of the specimens is shown before each entry; abbreviations are used for U.S. National Museum (USNM), University of California (UC), and University of California at Los Angeles (UCLA). All localities mentioned are in California.

For her indispensable aid in preparing the genitalia mounts and for her assistance in the preparation of the manuscript I should like to thank my wife, Mary Smith Sublette. Appreciation is also due Dr. Willis W. Wirth for reading the manuscript and making many helpful suggestions.

*Pseudochironomus*<sup>♀</sup>*richardsoni* Malloch

*Pseudochironomus richardsoni* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 500, 1915.

Males: Wing length, range 2.22–2.89; mean 2.55 mm. (8); leg ratio, range 0.84–0.94; mean 0.88 (4); antennal ratio, range 1.74–2.62; mean 2.21 (6).

Females: Wing length, range 2.22–3.15; mean 2.62 mm. (3); leg ratio 0.7 (1).

Material examined: In UCLA: 1 male, 1 female, Whitmore Tub, Mono Co., Aug. 3, 1952, W. A. McDonald; 5 males, 1 female, Resting Springs, May 29, 1955; 1 male, 1 female, 1000 Palm Canyon, Riverside Co., Mar. 20, 1954; B. In USNM: 6 males, Hume Lake, July 20, 1947, W; 1 female, Mono Lake, Mono Co., June 7, 1948, lake margin, W. In UC, Davis: 1 female, Manzanita Lake, Lassen National Park, June 16, 1941, J. R. Fisher.

*Lauterborniella agrayloides* (Kieffer)

*Tanytarsus (Calopsectra) agrayloides* Kieffer, Bull. Soc. Hist. Nat. Metz., vol. 27, pp. 45, 51, 1911.

Males: Wing length, range 1.44–1.66; mean 1.54 mm. (3); leg ratio 1.31 (1); antennal ratio, range 1.05–1.2; mean 1.11 (3).

Material examined: In USNM: 1 male, 6 miles east of Orosi, July 8, 1947; 2 males, Orosi, Tulare Co., June 5, 1947, W; 1 male, Tahoe City, June 17, 1920, H. G. Dyar.

*Microtendipes caducus* Townes

*Microtendipes caducus* Townes, Amer. Midl. Nat., vol. 34, p. 24, 1945.

Males: Wing length, range 2.96–3.44; mean 3.13 mm. (5); leg ratio 1.0, 1.12 (2); antennal ratio, range 2.0–2.08; mean 2.04 (5).

Material examined: In USNM: 4 males, Wheeler's Spring, Ventura Co., light trap, June 16, 1948, W; 1 male, Springville, July 10, 1947, W.

Previous California records: Tahoe City, Placer Co., Townes, 1945, p. 24.

*Microtendipes pedellus* var. *stygius* Townes

*Microtendipes pedellus* var. *stygius* Townes, Amer. Midl. Nat. vol. 34, p. 26, 1945

These specimens agree with the description of *M. pedellus* except for their higher antennal ratio. Two specimens were entirely dark while the other had the scutellum and legs stramineous except for the apical 0.1 of femora and basal and apical 0.1 of tibiae, which are blackish.

Males: Wing length, range 3.7–3.89; mean 3.76 mm. (3); leg ratio 1.1, 1.09 (2); antennal ratio 3.64, 3.37 (2).

Material examined: In UCLA: 2 males, 1000 Island Lake, Madera Co., Aug. 5, 1952, W. A. McDonald; 1 male, Lee's Lake, Chatworth, Los Angeles Co., Aug. 5, 1950, B.

*Paratendipes fuscitibia*, new speciesFIGURE 1,*a*

Holotype male: USNM 64709, Whitewater Canyon, Riverside Co., April 7, 1949, W.

Head dark brown; mouth parts and antennae infusate. Thorax dark brown, shining; vittae blackish brown, not strongly contracting; scutellum somewhat lighter brown; halteres white. Fork of Cu distal to r-m; R<sub>4+5</sub> terminates proximal to the point of termination of M. Squama well fringed. Femora, except bases, which are stramineous, and tibiae mostly concolorous brown. Basal two-thirds of proximal tarsal joint white; apical one-third brown, strongly contrasting; remaining tarsal joints brown.

Wing length 2.59 mm.; leg ratio 0.94; antennal ratio 1.53 (slide).

Abdomen blackish-brown, incisures somewhat lighter.

Genitalia scarcely distinguishable from *P. albimanus* (Meigen).

Paratype: One male collected with type (USNM).

Wing length 2.59 mm.; fore tarsi missing; antennal ratio 1.59.

Female: Unknown.

This species may be distinguished from the closely related *P. albimanus* (Meigen) by the darkened tibiae, the slightly larger size, and the smaller leg ratio.

*Paratendipes albimanus* (Meigen)

*Chironomus albimanus* Meigen, Systematische Beschreibung der Europäischen zweiflügeligen Insekten, vol. 1, p. 40, 1818.

Males: Wing length, range 1.74–2.07; mean 1.94 mm. (6); leg ratio, range 1.24–1.35; mean 1.3 (3); antennal ratio, range 1.44–1.51; mean 1.49 (4).

Material examined: In USNM: 2 males, Springville, Aug. 10, 1947, W; 3 males, 6 miles east of Orosi, July 8, 1947, W; 1 male, Visalia, July 4, 1947, W.

Previous California records: Olio, Plumas Co., Lake Tahoe, Townes, 1945, p. 29.

*Paratendipes subaequalis* (Malloch)

*Chironomus subaequalis* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 440, 1915.

Thorax dark brown instead of black as described (Malloch, 1915; Townes, 1945). However, the distinctive superior appendage of the male genitalia is diagnostic.

Males: Wing length, range 1.48–1.52; mean 1.49 mm. (4); leg ratio 1.33, 1.2 (2); antennal ratio 0.81 (1).

Material examined: In UCLA: 5 males, 1000 Palm Canyon, Riverside Co., Mar. 20, 1954, B.

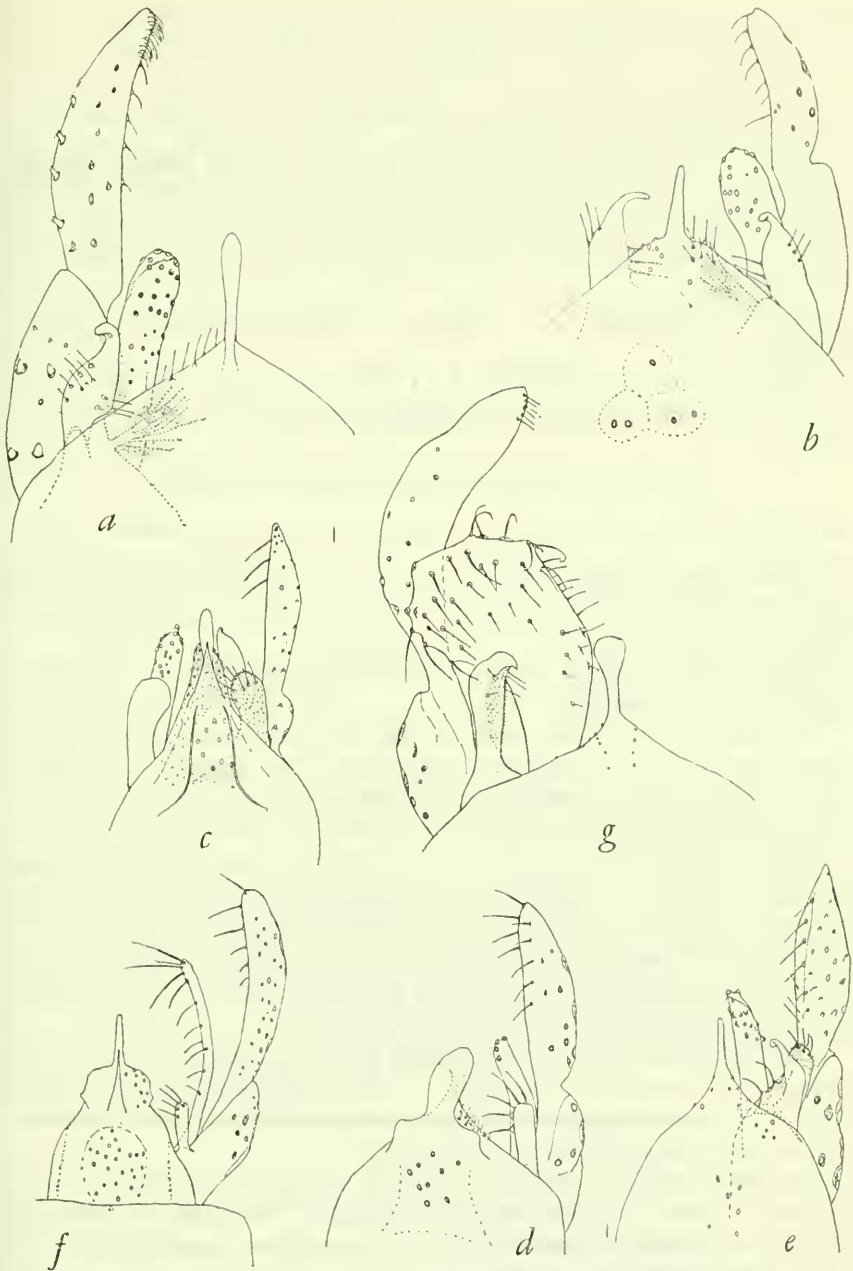


FIGURE 1.—Male genitalia: *a*, *Paratendipes fuscitibia*, new species; *b*, *Paratendipes thermophilus* Townes; *c*, *Polypedilum* (*Polypedilum*) *labeculosum* (Mitchell); *d*, *Polypedilum* (*Polypedilum*) *californicum*, new species; *e*, *Polypedilum* (*Polypedilum*) *subcultellatum*, new species; *f*, *Stenochironomus totifuscus*, new species; *g*, *Tendipes* (*Wirthiella*) *modocensis*, new species.

*Paratendipes thermophilus* Townes

## FIGURE 1,b

*Paratendipes thermophilus* Townes, Amer. Midl. Nat., vol. 34, p. 31, 1945.

The superior appendage of the genitalia in this species usually appears somewhat abbreviated because of the point being oriented dorsally. Figure 1, b, shows a variation in appearance, due to mounting technique, where the point of the superior appendage is fully appressed on the slide.

Males: Wing length 1.63, 1.59 mm. (2); fore tarsi missing; antennal ratio 1.51 (1).

Material examined: In UCLA: 1 male, Saratoga Springs, Death Valley, May 28, 1955; 1 male, Resting Springs, Inyo Co., May 29, 1955.

*Paralauterborniella subcincta subcincta* (Townes)

*Apedilum subcinctum* Townes, Amer. Midl. Nat., vol. 34, p. 33, 1945.

Males: Wing length, range 1.04–2.11; mean 1.48 mm. (61); leg ratio, range 0.95–1.36; mean 1.1 (33); antennal ratio, range 0.78–1.9; mean 1.28 (39).

Female: Wing length, range 1.29–1.55; mean 1.39 (7); leg ratio, range 1.0–1.17; mean 1.07 (7).

This is an exceedingly variable species which probably forms a North-South cline. The thorax varies from dark brown to black while the abdomen presents even greater differences. Some of the abdominal color patterns by locality are as follows: Davis: Segments 1 and 2 entirely dark brown; segments 3 to 5 with a narrow yellowish green posterior border, or segments entirely dark with only faintly lighter posterior margins. Rio Linda: Anterior half of tergites 1 to 4 brown; posterior half pale yellow. Resting Springs, Saratoga Springs, Death Valley: Abdomen largely pale green (fading to yellow or pale brown), occasionally with dorsum slightly infuscate.

The anal point of the male genitalia presents much variation due to differences in mounting technique. Not infrequently the anal point is obscured and in a few instances, particularly if lateral distortion has occurred, the point cannot be seen.

*Paralauterborniella elachista* (Townes) may be a synonym of this species. I have examined the type at the U.S. National Museum but cannot be certain without additional topotypic material that the species actually lacks an anal point.

Material examined: In Darby: 16 males, 7 females, Rio Linda, July 19, Sept. 22, 1957, D. In USNM: 4 males, Lee's Lake, Chatworth, Los Angeles, July 25, 1950, B; 1 male, Saratoga Springs, Death Valley, May 30, 1953, B; 5 males, 3 females, June 16, 19, 1954,

Belkin and McDonald; 1 male, Selma, July 10, 1947, W; 1 male, Hume Lake, Aug. 20, 1947, W; 3 males, Oso Flaco Lake, San Luis Obispo Co., June 23, 1948, W; 1 male, Davis, May 19, 1954, W. H. Lange. In UCLA: 58 males, Saratoga Springs, Death Valley, Mar. 19, May 28, 1955; 9 males, Lee's Lake, Chatworth, Los Angeles, Aug. 10, 1950, July 25, 27, 1952, B; 10 males, Whitmore Tub, Mono Co., Aug. 3, 9, 1952, W. A. McDonald; 2 males, Aliso Creek, Orange Co., May 8, 1955, C. L. Hogue; 2 males, Fish Spring, Salton Sea, Imperial Co., Oct. 18, 19, 1954, Whitney. In UC, Davis: 1 male, 1.5 miles northeast of Red Lake, Alpine Co., July 25, 1955, E. I. Schlinger; 1 male, Sacramento, June 6, 1957, M; 1 male, Elkhorn Ferry, Yolo Co., Apr. 16, 1952, E. I. Schlinger.

*Parakauterborniella subcincta alamedensis* new subspecies

Holotype male: USNM 64710, Sunol, Alameda Co., Sept. 9, 1947; W.

Head, thorax, and abdomen entirely blackish brown; palpi, antennae and legs concolorous dark brown. Thorax and abdomen with heavy silvery pruinosity when viewed obliquely. Prealar bristles 2 (may be rubbed); dorsolateral bristles in a single row. Scutellum rubbed but with punctae of a straight, transverse, anterior row of at least 12 bristles. Wings pale, anterior veins pale brown. Halteres basally infusate, distally pale. Fore tarsi with a short beard. Abdomen heavily pilose.

Wing length 2.22 mm.; leg ratio 0.96; antennal ratio 2.14.

The genitalia is indistinguishable from that of *P. subcincta subcincta* (Townes).

Paratypes: In USNM: 3 males, 2 collected with the type. In UCLA: 1 at Huntington Beach, Feb. 21, 1950.

Wing length, range 2.15–2.41; mean 2.32 mm. (3); leg ratio, range 0.91–1.0; mean 0.96 (3); antennal ratio 2.05, 2.45 (2).

*P. subcincta alamedensis* may be distinguished from *P. subcincta subcincta* (Townes) by its darker color, larger size, higher antennal ratio and generally lower leg ratio.

*Polypedilum (Polypedilum) labeculosum* (Mitchell)

FIGURE 1,c

*Chironomus labeculosum* Mitchell, Journ. New York Ent. Soc., vol. 16, p. 14, 1908.

This species was known only from three females from Hot Springs, Arizona. It is separated from all other Nearctic *Polypedilum* by a disconnected spot in cell  $Cu_1$ . The male, described below, is associated on the basis of this diagnostic feature.

Head, thorax and abdomen dark brown. Mesonotum with 2 conspicuous stripes of silvery pruinosity, narrowly separated on midline

and extending back to scutellum. Dorsomedian and dorsolateral bristles erect, in a single row. Prealar bristles about 4. Halteres white. Scutellum with 2 transverse rows of erect bristles. Wings distinctly spotted similar to *P. pardus* Townes and *P. parvum* Townes but with a disconnected spot in cell  $Cu_1$ . Femora dark brown with a conspicuous preapical white annulus; remainder of legs lighter brown, the tibiae with bases somewhat darker.

Wing length 2.0, 1.89 mm. (2); leg ratio 1.6 (1); antennal ratio 1.12 (slide) (1).

Abdomen with incisures marked by a very thin band of lighter color; conspicuously pilose.

Genitalia similar to *pardus* Townes but with the ninth tergite narrower and more elongate.

Material examined: In UCLA: 2 males, Resting Springs, May 30, 1955.

*Polypedilum (Polypedilum) californicum*, new species

FIGURE 1,d

Holotype male: USNM 64711, Saratoga Springs, Death Valley, May 27, 1955.

Head, thorax, and abdomen blackish brown. Dorsomedial and dorsolateral bristles erect, conspicuous, in a single row. Haltere knob black, pedicel somewhat paler. Wings pale; anal angle obtuse, correlated with small size; wing margin fringe quite long. Legs beyond coxae infusate stramineous.

Wing length, 1.33 mm.; fore tarsi missing; antennal ratio 0.76 (slide).

Genitalia near *floridense* Townes but superior and inferior appendages not apically narrowed. Inferior appendage shows reduction of bristles to 4 as in *floridense* Townes (5 in paratype).

Paratype males: In UCLA and USNM: 2 males collected with type. Prealar bristles apparently 4.

Wing length, range 1.18–1.33; mean 1.27 mm. (4); leg ratio 1.66, 1.62 (2); antennal ratio 0.78 (2).

This species may be distinguished from *P. floridense* Townes by the male genitalia which has the anal point less truncate and the superior and inferior appendages scarcely narrowed apically.

*Polypedilum (Polypedilum) subcullatatum*, new species

FIGURE 1,e

Holotype male: USNM 64712, 6 miles east of Orosi, California, July 8, 1947.

Head light brown except for basal segment of antenna which is whitish. Postocular bristles long and conspicuous, overhanging eyes; laterally in a single row, medially becoming doubled.



Thorax with a pale yellowish brown ground color; median vittae dark brown; lateral vittae and postnotum blackish-brown. Prealar bristles about 6; dorsolateral bristles in a double row. Scutellum and halteres yellowish white, the former with 2 irregular transverse rows of bristles. Fork of Cu distal to r-m;  $R_{2+3}$  and  $R_1$  slightly but distinctly separated at apex.  $R_{4+5}$  and M equidistant, terminating slightly before wing apex. Legs light brown, no tarsal beard.

Wing length 2.66 mm.; leg ratio 1.53; antennal ratio 2.0.

Abdomen light brown; first segment with a thin, slightly oblique longitudinal brown line; segments 2 to 5 with the apical one-third occupied by a dark brown band; segments 6 to 7 almost completely darkened.

Genitalia of this species is unique among Nearctic *Polypedilum* in having several bristles beyond the base on the superior appendage. It is very similar to the European *cultellatum* Goetghebuer (Goetghebuer, 1937). It differs by not having the inferior appendage widened and by having the blade of the superior appendage recurved, not acute.

Paratype male: Collected with type (USNM).

Wing length 2.26 mm.; leg ratio 1.6; antennal ratio 1.83.

#### *Polypedilum (Polypedilum) scalaenum* (Schrank)

*Tipula scalaena* Schrank, Fauna Boica . . ., vol. 3, p. 73, 1803.

Male: Wing length 1.55 mm.; fore tarsi missing; antennal ratio 1.5. The specimen is unusual in lacking the characteristic point on either side of the base of the anal point. In all other respects the individual is normal.

Females: Wing length 1.59, 2.22 mm. (2); leg ratio 1.58 (1).

Material examined: In UCLA: 1 male, 1 female, Davis, June 20, 1953, A. A. Grigarick; 1 female, Davis, March 30, 1954, M.

Previous California records: Laguna Canyon, Wirth and Stone, 1956, p. 421.

#### *Polypedilum (Polypedilum) parvum* Townes

*Polypedilum (Tripodura) parvum* Townes, Amer. Midl. Nat., vol. 34, p. 40, 1945.

Males: Wing length, range 1.41–1.63; mean 1.56 mm. (3); fore-tarsi and antennae missing.

Material examined: In USNM: 3 males, Palo Verde, Imperial Co., April 8, 1949, W.

#### *Polypedilum (Polypedilum) apicatum* Townes

*Polypedilum (Tripodura) apicatum* Townes, Amer. Midl. Nat., vol. 34, p. 39, 1945.

Male: Wing length 1.47 mm.; fore tarsi and antennae missing.

Female: Wing length 1.66 mm.; fore tarsi missing.

Material examined: In UCLA: 1 male, 1 female, China Ranch, Inyo Co., May 30, 1955.

***Polypedilum (Polypedilum) albinodus* Townes**

*Polypedilum (Tripodura) albinodus* Townes, Amer. Midl. Nat., vol. 34, p. 41, 1945.

Scarcely discernable cloudiness along  $Cu_2$  and below  $2A$ . Antennal ratio somewhat higher than Townes' figure and anal point with a slight notch; otherwise as his description.

Male: Wing length 2.66 mm.; leg ratio 1.48; antennal ratio 1.81.

Material examined: In USNM: 1 male, Berkeley, Strawberry Creek, Apr. 20, 1948, W.

***Polypedilum (Polypedilum) isocerus* Townes**

*Polypedilum (Tripodura) isocerus* Townes, Amer. Midl. Nat., vol. 34, p. 42, 1945.

Previous California records: Fallen Leaf, Lake Tahoe; Virginia Creek, Mono Co., Townes, 1945, p. 42.

***Polypedilum (Polypedilum) simulans* Townes**

*Polypedilum (Tripodura) simulans* Townes, Amer. Midl. Nat., vol. 34, p. 43, 1945.

Males: Wing length 1.55, 2.18 mm. (2); fore tarsi missing; antennal ratio 1.02, 1.88 (2).

Females: Wing length 1.48; 1.55 mm. (2); fore tarsi missing.

Material examined: In USNM: 1 male, Shafter, Kern Co., June 1946, light trap, B. Brookman; 1 male, 2 females, 6 miles east of Orsi, July 8, 1947, W.

***Polypedilum (Polypedilum) digitifer* Townes**

*Polypedilum (Tripodura) digitifer* Townes, Amer. Midl. Nat., vol. 34, p. 45, 1945.

Males: Wing length, range 1.66–1.96; mean 1.84 mm. (3); leg ratio 1.66 (1); antennal ratio, range 1.86–2.2; mean 2.06 (3).

Female: Wing length 2.18 mm.; leg ratio 1.55.

Material examined: In UCLA: 1 male, San Vincente Lake, San Diego Co., July 9, 1952, R. X. Schick. In Darby: 1 male, Rio Linda, Aug. 2, 1957; 1 male, Aug. 14, 1958; 1 female, Sept. 3, 1957, D. In USNM: 1 male, Seeley, Imperial Co., Apr. 5, 1949, at light, W.

Previous California records: Bakersfield, Townes, 1945, p. 45.

***Polypedilum (Polypedilum) halterale* (Coquillett)**

*Chironomus halteralis* Coquillett, Ent. News, vol. 12, p. 17, 1901.

Male: Wing length 1.89 mm.; fore tarsi missing; antennal ratio 2.2.

Female: Wing length 2.22 mm.; leg ratio 1.71.

Material examined: In USNM: 1 male, 1 female, Valley Home, Sept. 3, 1947, under bridge, W.

*Polypedilum (Polypedilum) laetum (Meigen)*

*Chironomus laetus* Meigen, Systematische Beschreibung der Europäischen zweiflügeligen Insekten, vol. 1, p. 38, 1818.

Male: Wing length 2.04 mm.; fore tarsi missing; antennal ratio 1.45.

Material examined: In USNM: 1 male, Kaweah River, Tulare Co., July 13, 1947, W.

Previous California records: Lake Tahoe, Townes, 1945, p. 50.

*Polypedilum (Polypedilum) artifer (Curran)*

*Chironomus artifer* Curran, Bull. Amer. Mus. Nat. Hist., vol. 61, p. 32, 1930.

Males: Wing length 2.74, 3.66 mm. (2); leg ratio 1.55 (1); antennal ratio 1.06 (1).

Material examined: In USNM: 1 male, Willow Creek, Humboldt Co., Aug. 12, 1948, W; 1 male, Hely Creek, Humboldt Co., Aug. 11, 1948, W.

*Polypedilum (Polypedilum) pedatum excelsius Townes*

*Polypedilum (Polypedilum) pedatum excelsius* Townes, Amer. Midl. Nat., vol. 34, p. 55, 1945.

Male: Wing length 3.18 mm.; leg ratio 1.08; antennal ratio 1.05.

Material examined: In USNM: 1 male, Elk Valley, Del Norte Co., January 1948, light trap, R. Coleman.

Previous California records: Clio, Plumas Co.; Crescent City, Townes, 1945, p. 55.

*Polypedilum (Polypedilum) nigratum Townes*

*Polypedilum (Polypedilum) nigratum* Townes, Amer. Midl. Nat., vol. 34, p. 56, 1945.

Males: Wing length range 2.18–2.29; mean 2.25 mm. (4); leg ratio, range 1.34–1.49; mean 1.4 (3); antennal ratio, range 1.3–1.44; mean 1.38 (4).

Material examined: In USNM: 5 males, Lagunitas Creek, Marin Co., Oct. 19, 1947, W.

*Polypedilum (Polypedilum) illinoense (Malloch)*

*Chironomus illinoensis* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 471, 1915.

Male: Wing length 2.29 mm.; leg ratio 1.62; antennal ratio 1.9.

Material examined: In USNM: 1 male, Sunol, Alameda Co., Nov. 2, 1947, R. Coleman.

***Polypedilum (Polypedilum) ophioides* Townes**

*Polypedilum (Polypedilum) ophioides* Townes, Amer. Midl. Nat., vol. 34, p. 57, 1945.

Male: Wing length 2.7 mm.; leg ratio 1.75; antennal ratio 2.20.

Material examined: In USNM: 1 male, Heather Lake, Sequoia National Park, 9,000 ft., Aug. 9, 1947, W.

***Polypedilum (Polypedilum) sulaceps* Townes**

*Polypedilum (Polypedilum) sulaceps* Townes, Amer. Midl. Nat., vol. 34, p. 53, 1945.

Male: Wing length 2.1 mm.; fore tarsi missing; antennal ratio 1.84.

Material examined: In USNM: 1 male, Visalia, July 4, 1947, W.

***Polypedilum (Polypedilum) aviceps* Townes**

*Polypedilum (Polypedilum) aviceps* Townes, Amer. Midl. Nat., vol. 34, p. 61, 1945.

Previous California records: San Jose, Santa Clara Co., Townes, 1945, p. 61.

***Polypedilum (Pentapedilum) tritum* (Walker)**

*Chironomus tritus* Walker, Insecta britannica, Diptera, vol. 3, p. 162, 1856.

Males: Wing length, range 1.85–2.66; mean 2.45 mm. (5); leg ratio, range 1.42–1.47; mean 1.45 (4); antennal ratio, range 1.67–1.91; mean 1.83 (4).

Female: Wing length 2.29 mm. (1); leg ratio, 1.5 (1).

Material examined: In USNM: 16 males, Heather Lake, Sequoia National Park, 9,000 ft., Aug. 9, 1947; 1 male, 1 female, Orosi, Tulare Co., June 5, 1947, W.

***Stictochironomus quagga* (Townes), new combination**

*Tanytarsus (Stictochironomus) quagga* Townes, Amer. Midl. Nat., vol. 34, p. 81, 1945.

Previous California records: Lake Tahoe; Truckee, Townes, 1945, p. 81.

***Stictochironomus naevus* (Mitchell), new combination**

*Chironomus naevus* Mitchell, Journ. New York Ent. Soc., vol. 16, p. 14, 1908.

Male: Wing length 4.03 mm.; fore tarsi missing; antennal ratio 2.96.

Material examined: In UC, Davis: 1 male, Davis, Mar. 29, 1952.

***Phaenopsectra albescens* (Townes), new combination**

*Tanytarsus (Tanytarsus) albescens* Townes, Amer. Midl. Nat., vol. 34, p. 73, 1945.

Males: Wing length, range 3.7–4.22; mean 3.92 mm. (3); leg ratio 1.03, 1.14 (2); antennal ratio, range 2.33–2.66; mean 2.53 (3).

Female: Wing length 4.14 mm.; fore tarsi missing.

Material examined: In USNM: 2 males, 1 female, Mount Shasta City, Siskiyou Co., July 20, 1948, W; 1 male, Alturas, Modoc Co., June 1948, R. Coleman.

The specimen from Alturas has the abdomen entirely black but is apparently referable to this species.

Previous California records: Gold Lake Camp, Plumas Co., Townes, 1945, p. 73.

*Phaenopsectra profusa* (Townes), new combination

*Tanytarsus* (*Tanytarsus*) *profusus* Townes, Amer. Midl. Nat., vol. 34, p. 73, 1945.

Males: Wing length, range 2.48–3.44; mean 2.97 mm. (7); leg ratio, range 1.13–1.2; mean 1.16 (3); antennal ratio, range 1.9–2.2; mean 2.04 (6).

Females: Wing length 2.81–2.89; mean 2.85 mm. (3); leg ratio 1.22, 1.25 (2).

Material examined: In USNM: 1 male, Big Sur River, Monterey Co., Feb. 11, 1948, stream margin, W; 1 male, Pollock Pines, Eldorado Co., July 14, 1948, at light, W; 1 male, 1 female, Springville, July 10, 1947, W; 1 male, Shafter, Kern Co., June 1946, light trap, B. Brookman; 1 male, 1 female, Hume Lake, July 20, 1947, W. In Darby: 1 male, 1 female, Sacramento, Oct. 16, Nov. 21, 1957, D. In UCLA: 1 male, Keen Camp, Riverside Co., Aug. 10, 1952. In UC, Davis: 1 male, 1 female, Green Valley, Sonoma Co., June 19, 1953, E. I. Schlinger; 1 male, Quincy, 4 miles west, Plumas Co., July 16, 1949, W. F. Ehrhardt; 1 male, Strawberry, Tuolumne Co., July 15, 1951, D. P. Lawfer; 1 female, Benton Station, Mono Co., July 20, 1950, H. A. Hunt; 1 female, Davis, May 16, 1952, E. I. Schlinger.

Previous California records: Clio, Plumas Co.; Fallen Leaf, Lake Tahoe; Palo Alto; Truckee, Townes, 1945, p. 73.

*Phaenopsectra dyari* (Townes), new combination

*Tanytarsus* (*Tanytarsus*) *dyari* Townes, Amer. Midl. Natl., vol. 34, p. 75, 1945.

Males: Wing length 3.44, 3.15 mm. (2); leg ratio 1.07, 1.13 (2); antennal ratio 1.71, 1.83 (2).

Females: Wing length, range 2.77–3.59; mean 3.13 mm. (3); leg ratio 1.14 (1).

Material examined: In USNM: 2 males, Fallen Leaf, Lake Tahoe, June 13, 1916, H.G. Dyar. This topotypic material was in the unidentified series at USNM and was apparently overlooked by Townes. In USNM: 1 female, Sanger, Fresno Co., Apr. 25, 1949, R. E. Ryckman; 2 females, Lagunitas Creek, Marin Co., Oct. 19, 1947, W.

Previous California records: Fallen Leaf, Lake Tahoe; Fieldbrook, Townes, 1945, p. 75.

*Phaenopsectra* sp.

One male in USNM, wing length 2.81 mm; leg ratio 1.21; antennal ratio 2.06, Visalia, June 30, 1947, W. This specimen is probably a color variety of *dyari* (Townes). Genitalia indistinguishable from *dyari*; abdomen solid dark brown.

*Phaenopsectra flavipes* (Meigen), new combination

*Chironomus flavipes* Meigen, Systematische Beschreibung der Europäischen zweiflügeligen Insecten, vol. 1, p. 50, 1818.

Previous California records: Blue Lake, Humboldt Co., Townes, 1945, p. 76.

*Stenochironomus totifuscus*, new species

## FIGURE 1, f

Holotype male: USNM 64713, 6 miles east of Orosi, Calif., July 8, 1947, W.

Head brown except flagellum which is stramineous and mouthparts which are blackish-brown. Thorax dark brown, heavily pollinose especially between median and lateral lobes of the mesonotum giving it a vittate appearance. Prealar bristles about 5. Dorsolateral bristles in a single row anteriorly, becoming staggered posteriorly, giving the appearance of a double row. Scutellum somewhat lighter brown than the postnotum which is entirely dark brown. Halteres white. Wing membrane and veins pale except r-m and f-Cu which are brown. Fork of the Cu distinctly distal to r-m. Legs almost uniformly stramineous except apices of femora which are faintly suffused with brown.

Wing length 2.44 mm.; leg ratio 1.1; antennal ratio 1.56.

Abdomen pale greenish white; segments 2 to 3 with a brown band on apical 0.13; segment 4 with the brownish band on apical 0.09; segment 5 suffused with brown, becoming almost black posteriorly; segment 6 almost entirely blackish.

Genitalia near *cinctus* Townes.

Paratypes: Two males, collected with type in USNM.

Wing length 2.37, 2.32 mm. (2); leg ratio 1.16, 1.17 (2); antennal ratio 1.51, 1.58 (2).

Allotype in USNM, Visalia, Calif., July 4, 1947, W.

As the male except that the thorax is somewhat lighter in color and the abdominal segments are uniformly pigmented with each segment having a slightly lighter colored apex.

Wing length 2.85 mm.; leg ratio 1.27.

This species is very near *cinctus* Townes but differs in lacking a central dusky wing band, in having a uniformly darkened postnotum, and in having slight differences in the male genitalia.

*Stenochironomus colei* (Malloch)

*Chironomus colei* Malloch, Proc. California Acad. Sci., vol. 9, p. 255, 1919.

Males: Wing length 2.55 mm. (1); leg ratio 1.17 (1); antennal ratio 2.4 (1).

Females: Wing length 3.15 mm. (1); leg ratio 1.3 (1).

The single female has the hind tibial band as wide as Townes' describes for *pulchripennis* (Coquillett). However, since the basal band of color on the wing membrane between C and R is lacking the specimen is clearly *colei*.

Material examined: In USNM: 2 males, Pollock Pines, Eldorado Co., July 14, 1948, at lights, W; King's River Bridge, Stratford, July 15, 1947, W; 1 female, Alturas, Modoc Co., July 18, 1947, R. Coleman. In UC, Davis: 1 female, Sacramento, May 29, 1956, S. M. Fidel; 2 females, Davis, April, 1941, G.E. Bohart.

Previous California records: Smith River, Crescent City, Townes, 1945, p. 88.

*Stenochironomus taeniapennis* (Coquillett)

*Chironomus taeniapennis* Coquillett, Proc. U.S. Nat. Mus., vol. 23, p. 607, 1901.

Previous California records: Lake Tahoe, Townes, 1945, p. 90.

*Tendipes (Tendipes) fulvipilus* (Rempel)

*Chironomus fulvipilus* Rempel, Zool. Anz., vol. 127, p. 210, 1939.

Males: Wing length 2.33, 2.59 mm. (2); leg ratio 1.52, 1.9 (2); antennal ratio 2.6, 2.8 (2).

Material examined: In UCLA: 2 males, Laguna Lake, Imperial Co., June 9, 11, 1950.

*Tendipes (Tendipes) stigmaterus* (Say)

*Chironomus stigmaterus* Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 3, p. 15, 1823.

Males: Wing length, range 4.44–4.99; mean 4.65 mm. (8); leg ratio, range 1.33–1.43; mean 1.37 (8); antennal ratio, range 4.68–5.3; mean 4.99 (5).

Females: Wing length, range 4.55–5.36; mean 5.07 mm. (4); leg ratio, range 1.32–1.42; mean 1.38 (3).

Material examined: In USNM: 1 male, Oso Flaco Lake, San Luis Obispo Co., June 22, 1948, W. In UCLA: 1 male, Westminster, Orange Co., June 5, 1939; 7 males, Huntington Beach, Feb. 20, 21, 1950; Beardsley, Los Angeles Co., June 9, 1955, J. G. Shanafelt; 4 females, Saratoga Springs, Death Valley, Mar. 19, April 23, 24, 1955. In UC, Davis: 1 female, Davis, Nov. 30, 1950, E. I. Schlinger;

1 female, Davis, May 12, 1958, A. D. Telford; 1 female, Edgemar, San Mateo Co., Aug. 10, 1950, E. C. Carlson.

*Tendipes (Tendipes) attenuatus* (Walker)

*Chironomus attenuatus* Walker, List of specimens of dipterous insects in the British Museum, pt. 1, vol. 1, p. 20, 1848.

Males: Wing length, range 2.59–4.55; mean 3.59 mm. (51); leg ratio, range 1.29–1.64; mean 1.46 (48); antennal ratio, range 2.75–4.1; mean 3.4 (42).

Females: Wing length, range 3.37–4.44; mean 3.86 mm. (15); leg ratio, range 1.24–1.72; mean 1.44 (11).

Although there is a considerable difference between the figure for antennal ratio given by Townes and that presented here, I do not consider it to be biologically significant but rather a reflection of the few measurements used by Townes.

Material examined: In Darby: Four males, 2 females, Davis, July 1, 29, 1957, D; 1 male, 1 female. Rio Linda, July 19, 24, 1957, D; 1 male, 1 female, Aug. 16, 1958, 1 male, Aug. 2, 1958, 1 female, July 24, 1957, D. In UCLA: 2 males, 2 females, Huntington Beach, Feb. 20, 1950, J. G. Shanafelt; 1 female, Mar. 9, 1949, G. Barnes; 3 males, 3 females, Devil's Gate Dam, Flintridge, Los Angeles Co., Apr. 12, May 10, 1955; 1 male, Lee's Lake, Chatworth, Los Angeles Co., Aug. 10, 1950, B; 1 male, 1 female, El Centro, Imperial Co., July 9, 1950; 2 males, Bradley, Monterey Co., Aug. 28, 1949, B; 1 male, Sherwood Lake, Ventura Co., July 26, 1952, R. X. Schick; 1 male, San Vincente Lake, San Diego Co., July 9, 1952, R. X. Schick; 12 males, 10 females, Midway City, Mar. 21, 1955, J. G. Shanafelt; 3 males, 4 females, Topanga Canyon, Los Angeles, May 14, 1952; 1 male, 1 female, Indian Wells, Riverside Co., May 9, 1952; 3 females, Whitmore Tub, Mono Co., Aug. 3, 1952, McDonald; 3 females, Bradley, Mono Co., Aug. 28, 1949, B; 1 female, Atwood, Mar. 18, 1955, J. G. Shanafelt; 1 female, Tanbark Flat, Los Angeles Co., June 28, 1950, W. A. McDonald; 1 female, Beverly Glen, Los Angeles Co., Feb. 22, 1951; 1 female, Cypress, Mar. 25, 1949, J. G. Shanafelt; 4 females, Buena Park, May 1, 1951, J. G. Shanafelt. In USNM: 1 male, Berkley, Strawberry Canyon, Alameda Co., June 5, 1948, W; 1 male, 1 female, June 1, 1948; 1 male, May 24, 1948, W; 1 male, Feb. 1949; 1 female, Apr. 20, 1948, W; 2 males, 2 females, Visalia, June 30, 1947, W; 1 male, Ventura Co., June 16, 1948, W; 1 male, Pismo Beach, San Luis Obispo Co., June 24, 1948, W; 1 male, Selma,



July 10, 1947, W; 2 males, Richmond, Contra Costa Co., June 2, 1949, R. E. Ryckman; 3 males, 1 female, Loma Linda, San Bernardino Co., Apr. 25, 27, 1949, R. E. Ryckman; 11 males, 3 females, Stratford, July 8, 1947, W; 1 male, Hume Lake, July 20, 1947, W; 1 male, Pine Creek, Inyo Co., June 6, 1948, W; 1 male, Santa Barbara Co., June 23, 1948, W; 11 males, Benicia Brooks, Apr. 15, 1907; 1 male, Lagunitas Creek, Marin Co., Oct. 19, 1947, W; 1 male, Dos Palos, Merced Co., Dec. 2, 1947, Ed Smith; 11 males, 1 female, Shafter, Kern Co., June 1946, light trap, B. Brookman; 1 male, Black Lake Canyon, San Luis Obispo Co., Aug. 19, 1948, W; 4 males, Mad River Beach, Humboldt Co., Aug. 13, 14, 1948, W; 1 male, Hydesville, Humboldt Co., Aug. 11, 1948, W; 1 male, Corcoran, Aug. 22, 1947, W; 6 males, 1 female, Springville, July 10, 1947, W; 1 female, Tule River, July 29, 1947, W; 4 males, Palo Verde, Imperial Co., Apr. 8, 1949, W; 1 female, Bolinas, June 5, 1949, R. E. Ryckman; 1 male, Tahoe City, June 17, 1920, H. G. Dyar; 1 female, Alturas, Modoc Co., July 14, 1948, W; 1 male, Garcia River, Mendocino Co., July 30, 1948, W. In UC, Davis: 5 males, 1 female, Sacramento, Apr. 19, 1956, Jack Fowler; 5 males, 1 female, Sacramento, Mar. 19, 1957, sewage plant, Jack Fowler; 3 males, 4 females, Davis, Apr. 30, 1951, E. I. Schlinger; 7 males, 4 females, Davis, April 1941, G. E. Bohart; 2 males, Davis, May 12, 1955, D. L. Dahlsten; 1 male, Davis, June 24, 1955, M; 1 male, Davis, Apr. 18, 1955, M; 3 males, Davis, Nov. 15, 1950, E. I. Schlinger; 1 male, 4 females, Davis, Aug. 4, 1955, E. I. Schlinger; 1 male, Davis, May 1955, D. C. Force; 1 male, Davis, July 28, 1955, M; 1 male, Davis, July 24, 1955, M; 1 male, Davis, June 1, 1949, E. I. Schlinger; 1 male, 4 females, Bear-Cache Creek Junction, Yolo Co., Apr. 19, 1954, E. I. Schlinger; 4 females, Davis, June 8, 1950, J. C. Hall; 1 female, Davis, May 14, 1952, E. I. Schlinger; 1 female, Davis, Dec. 8, 1950, E. I. Schlinger; 1 female, Green Valley, Solano Co., May 17, 1955, R. W. Bushing; 1 female, Hamilton City, Glenn Co., Apr. 25, 1956, S. M. Fidel; 1 female, Tanbark Flat, Los Angeles Co., July 19, 1952, M.

*Tendipes (Tendipes) atrella* Townes

*Tendipes (Tendipes) atrella* Townes, Amer. Midl. Nat., vol. 34, p. 124, 1945.

Male: Wing length 4.44 mm.; leg ratio 1.28; antennal ratio 3.64.

The specimen differs from Townes' original description in having a short, spare tarsal beard.

Material examined: In UC, Davis: One male, Pollock Pines, Eldorado Co., April 22, 1956, E. I. Schlinger.

Previous Calif. records: Tahoe City, Townes, 1945, p. 124.

*Tendipes (Tendipes) riparius* (Meigen)

*Chironomus riparius* Meigen, Klassifikation und Beschreibung der Europäischen zweiflügeligen Insekten, p. 13, 1804.

Male: Wing length 4.37 mm.; leg ratio 1.5; antennal ratio 3.65.

Females: Wing length, range 3.55–4.14; mean 3.88 mm. (5); leg ratio, range 1.5–1.73; mean 1.59 (5).

Material examined: In USNM: 1 male, 2 females, Alturas, Modoc Co., July 14, 1948, W; 3 females, Nevada Co., northwest of Cisco, May 16, 1948, W. In UC, Davis: One male, Hat Creek Post Office, Shasta Co., July 10, 1955, A. J. Mueller.

*Tendipes (Tendipes) utahensis* (Malloch)

*Chironomus utahensis* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 438, 1915.

Males: Wing length, range 4.1–4.92; mean 4.46 mm. (10); leg ratio, range 1.1–1.37; mean 1.17 (10); antennal ratio, range 4.76–5.8; mean 5.25 (9).

Females: Wing length, range 3.89–6.66; mean 4.81 mm. (7) leg ratio, range 1.15–1.3; mean 1.21 (7).

Material examined: In USNM: 2 males, 3 females, Stronghold, Modoc Co., July 17, 1948, W; 4 males, Westwood, Lassen Co., May 16, 1948, W; 1 female, Topaz Lake, Mono Co., July 25, 1948, R. Coleman; 6 females, June 5, 1948, W; 3 males, Topaz Lake, July 10, 1919; 6 males, Lake Crowley, Bishop, Inyo Co., June 11, 1949, P. R. Needham. In UC, Davis: One female, Topaz Lake, Mono Co., June 26, 1957, H. Axelrod; Blanco's Corral, White Mountains, Mono Co., 10,000 ft.; July 5, 1958, W. D. McLehan.

In addition to the above there are 2 females, Moss Beach, San Mateo Co., March 21, 1948, W and 1 female, Convict Lake, Mono Co., June 6, 1948, lake margin, W, both in USNM, which probably are referable to this species although they have unusually high leg ratios. The larger size rules out *T. atrella* Townes. Wing length, range 4.7–6.11; mean 5.21 mm. (3); leg ratio, range 1.36–1.5; mean 1.42 (3).

Previous California records: Alkali Lake in Antelope Valley, Townes, 1945, p. 127.

*Tendipes (Tendipes) staegeri* (Lundbeck)

*Chironomus staegeri* Lundbeck, Vidensk. Meddel. Nat. For. København, vol. 50, p. 271, 1898.

Males: Wing length, range 3.96–4.74; mean 4.41 mm. (7); leg ratio, range 1.21–1.35; mean 1.28 (6); antennal ratio, range 3.75–4.44; mean 4.13 (5).

Material examined: In USNM: 4 males, Lake Almanor, Plumas Co., May 16, 1948, W; 3 males, Westwood, Lassen Co., May 16, 1948, W. In UC, Davis: 1 male, Lakeport, Apr. 18, 1957, S. M. Fidel; 1 male, Maraga, Jan. 25, 1936.

*Tendipes (Tendipes) anthracinus* (Zetterstedt)

*Chironomus anthracinus* Zetterstedt, Diptera scandinaviae disposita et descripta, vol. 14, p. 6499, 1860.

Male: Wing length 5.18 mm.; leg ratio 1.41; antennal ratio 4.1.

Material examined: In USNM: 1 male, Fallen Leaf, Lake Tahoe, June 15, 1916, H. G. Dyar.

Previous California records: Golden Lake Camp, Plumas Co., Townes, 1945, p. 130.

*Tendipes (Tendipes) plumosus* (Linné)

*Tipula plumosa* Linné, Systema naturae, ed. 10, p. 587, 1758.

Males: Wing length, range 4.51–6.29; mean 5.27 mm. (13); leg ratio, range 1.2–1.31; mean 1.24 (12); antennal ratio, range 4.14–5.8; mean 4.89 (12).

Females: Wing length, range 4.88–6.74; mean 5.61 mm. (10); leg ratio, range 1.14–1.24; mean 1.2 (8).

Material examined: In Darby: 1 male, 1 female, Davis, June 26, 1957, D. In USNM: 2 males, Stratford, July 8, 1947, W; 2 males, Loma Linda, San Bernardino Co., Apr. 25, 1949, R. E. Ryckman; 3 males, Clear Lake, Oct. 11, 1947, W; 2 males, Shafter, Kern Co., June 1946, B. Brockman; 5 males, 1 female, Lake Crowley, Bishop, Inyo Co., June 11, 1949, P. R. Needham. In UCLA: 2 males, Whitmore Tub, Mono Co., Aug. 3, 1952, W. A. McDonald; 1 male, 12 females, Alturas, Modoc Co., Aug. 21, 1952, B. Tuiglof; 1 male, Mohave, Kern Co., Apr. 2, 1933; 3 females, Huntington Beach, Feb. 21, 1950; 1 female, Indian Wells, Riverside Co., May 9, 1952; 1 male, Saratoga Springs, Mar. 20, 1955, B; 1 female, Gorman, Los Angeles Co., Feb. 2, 1953, J. W. Warren; 2 females, Lancaster, Los Angeles Co., May 13, 1953. In UC, Davis: 5 males, Clear Lake Oaks, Lake Co., Apr. 19, 1954, E. I. Schlinger; 1 male, Lake Almanor, Plumas Co., July 8, 1949, 3 females, Riverside, June 28, 1954, J. C. Hall; 1 female, Ryder Island, May 3, 1923, F. H. Wymore; 1 male, Soda Bay, Lake Co., July 25, 1958, R. E. Dolphin; 1 female, Three Rivers, Tulare Co., July 3, 1955, H. R. Moffitt; 1 male, 1 female, Topaz Lake, Mono Co., June 26, 1957, H. Axelrod; 1 female, Davis, May 12, 1949, M; 1 female, Davis, April 1941, G. E. Bohart; 1 male, Davis, May 13, 1952, E. M. Evans; 1 male, Davis, May 13, 1952, R. M. Bohart; 1 male, 1 female, Davis, May 13, 1952, W. J. Wall; 1 male, 1 female, Davis, Apr. 10, 1951, E. I. Schlinger and R. C.

Beechtel; 2 females, Davis, May 12, 1955, D. L. Dahlstep; 1 male, 1 female, Davis, Nov. 6, 1937, G. Spurlock; 1 male, Antioch, May 18, 1936.

Previous California records: Los Angeles; Palmdale; San Diego, Townes, 1945, p. 132.

*Tendipes (Tendipes) dorsalis* (Meigen)

*Chironomus dorsalis* Meigen, Systematische Beschreibung der Europäischen zweiflügeligen Insekten, vol. 1, p. 25, 1818.

Male: Wing length 3.85 mm.; leg ratio 1.6; antennal ratio 3.0.

Material examined: In Darby: One male, Carmichael, Sacramento Co., Dec. 8, 1957, D.

In addition there is one female which probably belongs here, with a wing length of 3.22 mm. and a leg ratio of 1.68. Material examined: (USNM), Heather Lake, Sequoia National Park, 9,000 ft., Aug. 9, 1947.

*Wirthiella*, new subgenus

Diagnosis: Pronotum broad, collarlike; scarcely narrowed medially, with a very slightly discernable notch; slightly inferior to anterior end of mesonotum; palpi of normal length; fork of Cu distal to r-m;  $R_2+3$  distinctly separated from  $R_1$  and terminates half way between  $R_1$  and  $R_4+5$ ; tarsal beard present.

Male genitalia: Superior appendage elongated, beaklike; inferior appendage extremely widened apically, with numerous conspicuous bristles.

Type species: *Tendipes (Wirthiella) modocensis*, new species.

It is with pleasure that I name this subgenus in honor of Dr. Willis W. Wirth.

*Tendipes (Wirthiella) modocensis*, new species

FIGURE 1,g

Holotype male: USNM 64714, inspection station, Alturas, Modoc Co., May 15, 1948, stream margin, W.

Head entirely black; antennal pedicels large, contiguous, thus making it impossible to see if frontal tubercles are present or absent. Palpi normal, ratio 10:32:25:26.

Thorax black except small infuscate yellowish pleural area; lightly greyish pruinose; mesonotum with 2 inconspicuous tubercles on the median line, one at the anterior end of the prescutellar area, the other at the posterior, immediately in front of the scutellum; prealar bristles about 5; dorsolateral bristles in a single, staggered row; haltere knob infuscate yellow, stalk black; scutellum with many strewn

bristles; fore tarsi heavily bearded; legs black except for trochanters, which are brownish.

Wing length 4.07 mm.; leg ratio 1.25; antennal ratio 3.62.

Abdomen black; each segment pruinose except apically, heavily pilose.

Female: Unknown.

This species may be distinguished from all other Nearctic Chironomini by the elongate, beaklike superior appendage and the extremely widened inferior appendage of the male genitalia.

*Tendipes (Endochironomus) nigricans (Johannsen)*

*Chironomus nigricans* Johannsen, Bull. New York State Mus., vol. 86, p. 219, 1905.

Males: Wing length, range 3.33–4.51; mean 3.97 mm. (3); leg ratio, range 1.06–1.25; mean 1.15 (3); antennal ratio 2.5, 2.83 (2).

Females: Wing length, range 3.78–5.47; mean 4.36 mm. (4); leg ratio, range 1.13–1.23; mean 1.16 (3).

Material examined: In Darby: 1 male, Rio Linda, July 16, 1957, D. In USNM: 2 males, Moss Beach, San Mateo Co., Mar. 21, 1948, W; 1 male, Stratford, King Co., July 19, 1947, W; 2 females, Lemoore, King Co., Aug. 31, 1947, W; 1 female, Mad River Beach, Humboldt Co., Aug. 13, 1948, W.

Previous California records: Crescent City, Palo Alto, Townes, 1945, p. 64.

*Tendipes (Tribelos) hesperius, new species*

FIGURE 2,a

Holotype male: USNM 64715, Corcoran, Aug. 22, 1947, W.

Head dark brown; antennae somewhat lighter brown. Mesonotum and scutellum yellowish brown; postnotum darker brown; halteres pale at base, blackish on knob; dorsolateral bristles in a staggered partially doubled row; prealar bristles apparently 4; scutellum with a transverse straight row of about 12 long erect bristles which emerge from conspicuously darkened alveoli; middle and hind legs entirely stramineous, front legs slightly darker; wing hairs along anterior veins pale and short, not especially conspicuous.

Wing length 2.22 mm.; leg ratio 1.16; antennal ratio 1.85.

Abdominal segment 1 brown; segment 2 with basal half brown to dark brown, the apical half paler brown; segments 3 to 5 with the apical band of lighter brown progressively narrowed posteriorly; segments 6 to 8 largely dark brown.

Allotype: Collected with the holotype.

Slightly darker than the male; abdomen with the segments progressively darker posteriorly, apex of segments 1 to 4 slightly lighter, segments 5 to 8 blackish-brown. Wing length 2.22 mm.; leg ratio 1.2.

Paratypes: Eight males, 1 female, collected with holotype and allotype, in USNM.

Males: Wing length, range 2.11–2.41; mean 2.22 mm. (5); leg ratio, range 1.07–1.13; mean 1.11 (5); antennal ratio, range 1.8–2.0; mean 1.88.

Female: Wing length, 2.29 mm.; leg ratio, 1.19.

This species most closely resembles *T. fuscicornis* (Malloch) from which it may be distinguished by its black knobbed halteres and hairs of the anterior wing veins which are pale and of normal length.

Subgenus *Tribelos* Townes, previously under the genus *Tanytarsus* (i.e., *Phaenopsectra*), is here considered to be a unit of *Tendipes* (vide Dendy and Sublette, 1959).

*Tendipes (Dicrotendipes) californicus* (Johannsen)

*Chironomus californicus* Johannsen, Bull. New York State Mus., vol. 86, p. 217, 1905.

Males: Wing length, range 2.04–3.6; mean 2.61 mm. (25); leg ratio, range 1.39–1.75; mean 1.57 (23); antennal ratio, range 2.29–2.83; mean 2.57 (19).

Females: Wing length, range 2.52–3.81; mean 3.07 mm. (11); leg ratio, range 1.5–1.77; mean 1.62 (10).

Material examined: In Darby: 1 male, 4 females, Carmichael, Dec. 8, 18, 1957, D; 4 males, 6 females, Rio Linda, Aug. 2, 6, 1957, D. In UCLA: 1 female, Saratoga Springs, May 28, 1955; Huntington Beach, 3 males, Feb. 21, 1950, 7 males, Apr. 6, 1949; 4 males, Resting Springs, May 29, 30, 1955; 12 males, Lee's Ranch, Chatworth, Los Angeles, July 25, 1950; 4 males, 1000 Islands, Madera Co., Aug. 5, 1952, W. A. McDonald; 1 female, Indian Wells, Riverside Co., May 9, 1952. In USNM: 6 males, Clear Lake, Lake Co., Oct. 11, 1947, W; 1 male, Wheeler's Springs, Ventura Co., June 16, 1948, W; 2 females, Shafter, Kern Co., June 8, B. Brookman. In UC, Davis: 1 male, Davis, June 3, 1949, R. C. Bechtel.

This species was highly variable as to size and ratios and, at first glance, was made of several populations that approached subspecific level. However, a plot of measurements indicated sufficient overlap so as to show lack of population isolation necessary for subspecific identity.

Previous California records: Pasadena, Johannsen, 1905, p. 217; Los Angeles, Townes, 1945, p. 105.

*Tendipes (Dicrotendipes) modestus* (Say)

*Chironomus modestus* Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 3, p. 13, 1823.

Male: Wing length 2.29 mm.; leg ratio 1.57; antennal ratio 2.27.

Material examined: In Darby: One male, Rio Linda, July 21, 1957, D.

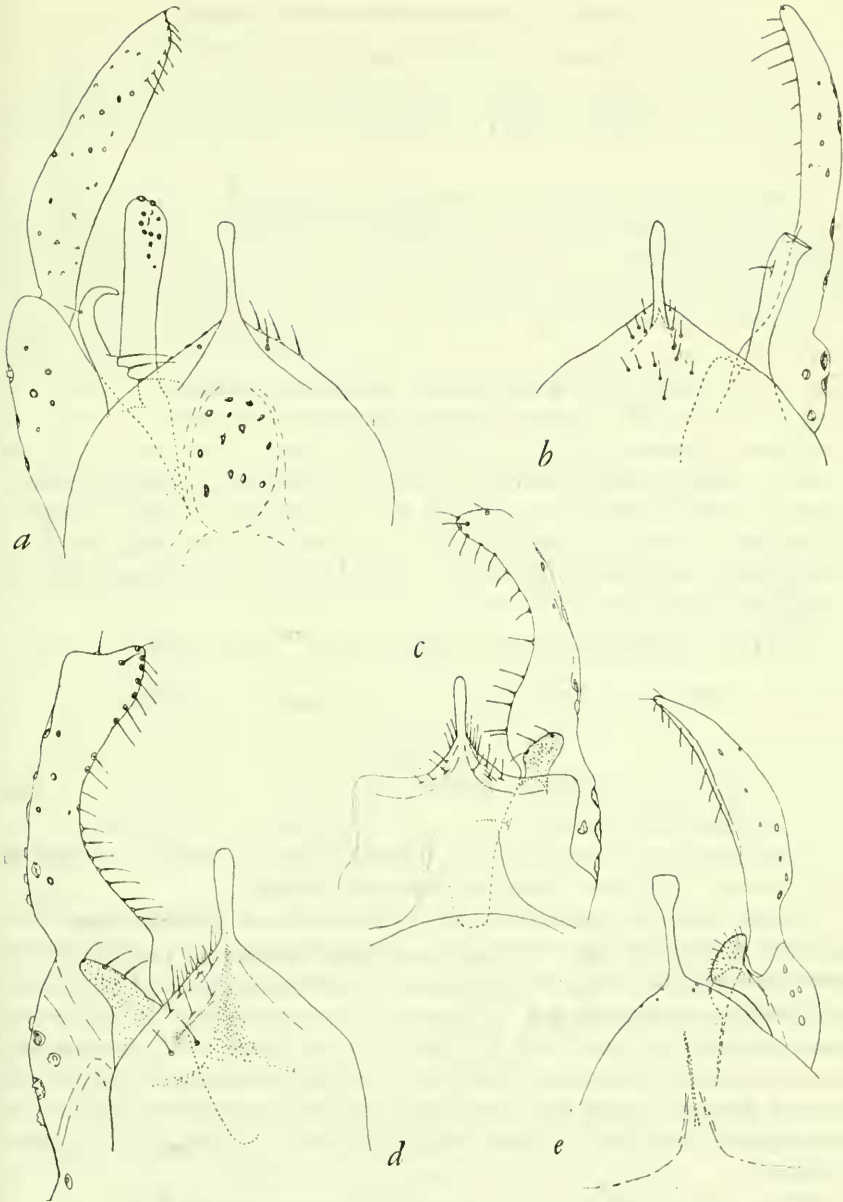


FIGURE 2.—Male genitalia: a, *Tendipes (Tribelos) hesperius*, new species; b, *Tendipes (Cryptochironomus) chaetoala*, new species; c, *Tendipes (Cryptochironomus) darbyi*, new species; d, *Tendipes (Cryptochironomus) ariel*, new species; e, *Tendipes (Cryptochironomus) alphaeus*, new species.

*Tendipes (Dicrotendipes) nervosus* (Staeger)

*Chironomus nervosus* Staeger, Naturhist. Tidsskr., vol. 2, p. 567, 1839.

Males: Wing length, range 2.22–2.96; mean 2.57 mm. (6); leg ratio, range 1.47–1.58; mean 1.53 (4); antennal ratio, range 2.63–3.13; mean 2.93 (5).

Intersex: Wing length 2.18 mm.; leg ratio 1.7. This individual was apparently parasitized by a mermithid nematode as indicated by the swollen abdomen. Most body features were those of the female except that the genitalia were those of the male, reduced in size.

Material examined: In Darby: 2 males, 1 intersex, Rio Linda, June 20, Sept. 3, 1957, D. In USNM: 1 male, Clear Lake, Lake Co., Oct. 11, 1947, W; 2 males, Oceano Beach, San Luis Obispo Co., Aug. 20, 1948, W; 2 males, Sunol, Alameda Co., Nov. 2, 1947, R. Coleman; 2 males, W.M. on 1 slide, Nice, Oct. 1938, Lindquist and Roth; 1 male, Orosi, Tulare Co., June 5, 1947, W; 1 male, Heather Lake, Sequoia National Park, 9,000 ft., Aug. 9, 1947; 1 male, Rockwell Pond, Selma, Aug. 4, 1947, W; 1 female, Oso Flaco Lake, San Luis Obispo Co., June 23, 1948, W. In UC, Davis: 1 male, Davis, Apr. 3, 1949, R. C. Bechtel.

Previous California records: Lake Tahoe, Townes, 1945, p. 108.

*Tendipes (Cryptochironomus) chacoala*, new species

## FIGURE 2,b

Holotype male: USNM 64716, Lee's Ranch, Chatworth, Los Angeles, July 25, 1950.

Head greenish, the color more intensified on the occiput; pedicel of the antenna yellowish, flagellum infusate brown.

Thorax largely yellowish-brown, the anterior pleural areas pale green; prealar bristles 4 to 5; dorsolateral bristles in partial double row; halteres yellowish; scutellum pale green with 12 erect bristles in a straight transverse row (paratype); wing membrane with sparse macrotrichia at tips of cell  $R_{4+5}$  and M, the hairs in  $R_{4+5}$  extending more than half the way to the base; squama well fringed; hind tibial combs close together, the inner spine slightly longer than the outer; no beard; femora and tibiae stramineous, tarsi darkened, the foretarsi more so.

Wing length 1.85 mm.; leg ratio 1.52; antennal ratio 2.14.

Abdomen light green.

Genitalia very similar to *potamogeti* (Townes) but differs in mode of attachment of the anal point and in details of structure of the superior appendage.

Paratypes: In UCLA and USNM: 4 males collected with the holotype; 2 males collected at type locality, Aug. 10, 1950; 1 male,



Selma, July 10, 1947, W. In Darby: 1 male, July 15, 1957, 1 male, July 8, 1957, 2 males, July 31, 1957, 3 males, Aug. 4, 1958, D.

Wing length, range 1.77–2.0; mean 1.88 mm. (7); leg ratio, range 1.47–1.61; mean 1.56 (4); antennal ratio, range 1.97–2.43; mean 2.24 (6).

Female: Unknown.

The presence of space macrotrichia on the wing membrane serves to distinguish this species from all other Nearctic *Cryptochironomus*. The male genitalia most closely resembles that of *T. potamogeti* (Townes) but differs in having the lateral bristle of the superior appendage more proximal.

*Tendipes (Cryptochironomus) darbyi*, new species

FIGURE 2,c

Holotype male: USNM 64717, Rio Linda, Sacramento Co., July 10, 1957, D.

Head pale green becoming brown on clypeus and mouthparts. Antennal pedicel blackish brown, flagellum and plumes pale brown. Thoracic ground color pale green; vittae, mesosternum, a small spot on pleura ventral and slightly anterior to wing bases, and posterior half of postnotum blackish brown, strongly contrasting with the ground color; anterior end of median and posterior end of lateral darker brown than remainder of vittae. Prealar bristles 2; dorsolateral bristles in a single row; scutellum with a transverse row of 6 pale, erect bristles; halteres pale green. Wings milky by reflected, brown by transmitted light; squamal fringe with about 8 hairs (paratype). Legs pale green; fore leg entirely dusky beyond middle of femur; middle and hind legs dusky only on tarsi.

Wing length 2.5 mm.; leg ratio 1.27; antennal ratio 2.5.

Abdominal segments 1 to 4 pea green becoming dark brown on segments 5 to 8 (paratype).

Genitalia very similar to that of *T. ariel*, new species but less massive.

Female: Unknown.

Paratypes: In USNM: 2 males, Stratford, July 8, 1947; 1 male, collected with the type. In Darby: 1 male, Davis, July 3, 1957, D. In UC, Davis: 1 male, Davis, June 8, 1958, J. C. Hall.

Wing length, range 1.55–1.74; mean 1.68 mm. (4); leg ratio, range 1.34–1.4; mean 1.37 (3); antennal ratio, range 2.6–2.82; mean 2.71 (4).

This species with its dusky fore legs and its distinctive genitalia can only be confused with *T. (Cryptochironomus) ariel*, new species. *T. darbyi* can be separated by its smaller size, lighter color, smaller antennal ratio and different genitalia.

I am happy to name this species after R. E. Darby.

*Tendipes (Cryptochironomus) ariel*, new species

FIGURE 2,d

Holotype male: USNM 64718, Topaz Lake, Mono Co., June 5, 1948, W.

Head, thorax and abdomen blackish-brown with a faint suggestion of a dark olive green ground color. Dorsolateral bristles in a single row; prealar bristles about 5. Haltere knob whitish, pedicel blackish-brown. Wings somewhat milky by reflected light, brownish-purple by transmitted light; squama with 10-12 hairs. Legs dark brown; basal one-third of femora somewhat paler; fore tarsi heavily bearded.

Wing length 2.59 mm.; leg ratio 1.37; antennal ratio 3.47.

Abdomen heavily pilose, the long hairs arising from very distinct alveoli.

Genitalia: The shape of the ninth tergite as figured for *T. darbyi* and this species would indicate a distinctiveness which is not real, as is shown by intermediates in the paratypic series of this species. The difference is interpreted as a variation in mounting technique.

Female: Unknown.

Paratypes: Five males collected with the holotype (USNM).

Wing length, range 2.41-2.74; mean 2.6 mm. (5); leg ratio, range 1.24-1.46; mean 1.37 (5); antennal ratio, range 3.17-3.5; mean 3.34 (5).

Of the Nearctic fauna, this species can be confused only with *T. darbyi*, new species. The two species may ultimately prove to be extremes of a clinal series. However, in the absence of individuals with intermediate characteristics the two are considered separate species.

*Tendipes (Cryptochironomus) alphaeus*, new species

FIGURE 2,e

Holotype male: USNM 64719, King's River Canyon, July 20, 1947, W.

Head and most of thorax dark brown; anterior pleural areas, spaces between vittae and scutellum somewhat paler; mesonotum and antennal pedicel heavily dusted with greenish-gray pollen; halteres whitish, base somewhat infusate; squama with at least 3 hairs; middle and hind tibiae each with 2 spurs; legs stramineous, knees somewhat darker.

Wing length 1.92 mm.; leg ratio 1.64; antennal ratio 1.8.

Abdomen brown with a dark olive green tinge; incisures slightly darker; apical segments progressively darkened to a dark brown.

Genitalia very similar to *undine* (Townes) but differing in having a more spatulate anal point, a superior appendage of a slightly different shape and orientation and an inferior appendage which is shorter and broader.

Female: Unknown.

This species is separated from others of the *Cladopelma* group on the basis of its distinctive male genitalia.

***Tendipes (Cryptochironomus) fulvus* (Johannsen)**

*Chironomus fulvus* Johannsen, Bull. New York State Mus., vol. 86, p. 224, 1905.

Males: Wing length, range 2.32–3.03; mean 2.74 mm. (16); leg ratio, range 1.37–1.68; mean 1.55 (14); antennal ratio, range 2.55–3.44; mean 3.03 (14).

Females: Wing length, range 2.41–3.03; mean 2.70 mm. (3); leg ratio 1.46, 1.68 (2).

Material examined: In USNM: 5 males, 1 female, Clear Lake, Co., Oct. 11, 1947, W; 3 males, 2 females, Stratford, July 8, 1947, W; 3 males, 1 female, Hume Lake, July 20, 1947, W; 1 male, Palo Verde, Imperial Co., Mar. 8, 1949. In Darby: 4 males, 1 female, Rio Linda, Aug. 2, Sept. 3, 1957; 2 males, Aug. 14, 1958, D; 1 male, Sacramento, Oct. 16, 1957, D; 1 male, Davis, July 27, 1957, 1 male, Aug. 25, 1958, D. In UCLA: 2 males, 2 females, Huntington Beach, Apr. 6, 1949. In UC, Davis: 1 male, Davis, May 13, 1952, A. A. Grigarick; 1 male, 1 female, Davis, May 13, 1952, M.

Previous California records: Clear Lake, Nice, Townes, 1945, p. 98.

***Tendipes (Cryptochironomus) digitatus* (Malloch), new combination**

*Chironomus digitatus* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 483, 1915.

Previous California records: Truckee, Townes, 1945, p. 100.

***Tendipes (Cryptochironomus) frequens* (Johannsen), new combination**

*Chironomus frequens* Johannsen, Bull. New York State Mus., vol. 86, p. 230, 1905.

Males: Wing length, range 2.52–2.89; mean 2.69 mm. (8); leg ratio, range 1.24–1.32; mean 1.26 (8); antennal ratio, range 2.86–3.22; mean 3.09 (7).

Female: Wing length 2.85 mm.; leg ratio 1.28.

Material examined: In USNM: 2 males, Hume Lake, July 20, 1947, W. In Darby: 2 males, 1 female, Rio Linda, July 5, Oct. 3, 1957; 8 males, Aug. 14, 1958, D; 2 males, Davis, June 26, Aug. 26, 1957, D.

***Tendipes (Cryptochironomus) monochronomus* (Wulp)**

*Chironomus monochronomus* Wulp, Tijdschr. Ent., vol. 17, p. 129, 1874.

Males: Wing length, range 1.77–2.0; mean 1.88 mm. (9); leg ratio, range 1.43–1.53; mean 1.49 (4); antennal ratio, range 2.17–2.5; mean 2.34 (8).

Material examined: In USNM: 11 males, Woodlake, July 28, 1947, W; 1 male, Tule River, Springville, July 29, 1947, W. In Darby: 1 male, Rio Linda, Aug. 21, 1958, D.

*Tendipes (Cryptochironomus) tenuicaudatus* (Malloch)

*Chironomus tenuicaudatus* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 475, 1915.

Males: Wing length, range 1.85–2.22; mean 2.05 mm. (8); leg ratio, range 1.35–1.53; mean 1.43 (5); antennal ratio, range 2.17–2.53; mean 2.4 (6).

Material examined: In Darby: 7 males, Rio Linda, July 14, Sept. 15, 1957, 3 males, Davis, Aug. 25, 1958, D. In UCLA: 3 males, Lee's Lake, Chatworth, Los Angeles, Aug. 10, 1950, B.

*Tendipes (Cryptochironomus) nigrovittatus* (Malloch), new combination

*Chironomus nigrovittatus* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 456, 1915.

Males: Wing length, range 1.48–1.81; mean 1.55 mm. (7); leg ratio, range 1.2–1.38; mean 1.31 (6); antennal ratio, range 2.1–2.35; mean 2.22 (5).

Material examined: In USNM: 3 males, Woodlake, July 28, 1947, W; 3 males, W. M. on 1 side, Nice, Oct. 1938, Lindquist and Roth; 3 males, Palo Verde, Imperial Co., Apr. 8, 1949, W. In UCLA: 1 male, San Vicente Lake, San Diego Co., July 9, 1952, R. X. Schick.

*Tendipes (Cryptochironomus) curtilamellatus* (Malloch), new combination

*Chironomus curtilamellatus* Malloch, Bull. Illinois State Lab. Nat. Hist., vol. 10, p. 474, 1915.

Males: Wing length, range 1.92–2.18; mean 2.05 mm. (5); leg ratio, range 2.0–2.1; mean 2.03 (5); antennal ratio, range 2.6–3.04; mean 2.8 (5).

Material examined: In Darby: 5 males, Davis, June 26, 1957, D.

*Tendipes (Cryptochironomus) edwardsi* Kruseman

*Tendipes (Parachironomus) edwardsi* Kruseman, Tijdschr. Ent., vol. 76, p. 194, 1933.

Wing length, range 1.55–1.96; mean 1.7 mm. (4); leg ratio, range 1.55–1.6; mean 1.58 (4); antennal ratio 2.23 (1).

Material examined: In USNM: 2 males, Woodlake, July 28, 1947, W; 1 male, Hume Lake, July 20, 1947, W; 1 male, Selma, July 10, 1947, W.

*Tendipes (Cryptochironomus) amachaerus* (Townes)

*Harnischia (Harnischia) amachaerus* Townes, Amer. Midl. Nat., vol. 34, p. 168, 1945.

Males: Wing length 1.55, 1.7 mm. (2); leg ratio 1.6, 1.73 (2); antennal ratio 2.68 (1).

Material examined: In USNM: 2 males, Selma, July 10, 1947, W.

*Tendipes (Cryptochironomus) viridulus* (Linné), new combination

*Tipula viridulus* Linné Systema naturae, ed. 12, p. 975, 1767.

Male: Wing length 1.96 mm.; leg ratio 1.81; antennal ratio 2.3.

Material examined: In USNM: 1 male, Hume Lake, July 20, 1947, W.

*Glyptotendipes (Phytotendipes) lobiferus* (Say)

*Chironomus lobiferus* Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 3, p. 12, 1823.

Males: Wing length, range 2.59–4.14; mean 3.51 mm. (11); leg ratio, range 1.17–1.39; mean 1.32 (10); antennal ratio, range 3.6–5.0; mean 4.24 (11). Tarsal joint 2:3, range 1.28–1.47; mean 1.38 (10). Length of scar on 6th abdominal segment:segment length, range 0.57–0.74; mean 0.69 (9). Scar on 6:scar on 2, range 2.5–4.44; mean 3.39 (9).

Females: Wing length, range 3.81–4.29; mean 4.09 mm. (3); leg ratio, range 1.4–1.44; mean 1.42 (3). Tarsal joint 2:3, 1.47, 1.37 (2). Scar on abdominal segment:segment length 0.58–0.74; mean 0.64 (3). Scar on 6:scar on 2, 3.33 (1).

Material examined: In USNM: 1 male, 1 female, Tulare Co., May 1947, W; 3 males, 1 female, King's River, Stratford, July 15, 1947, W; 2 males, 1 female, Clear Lake, Lake Co., Oct. 11, 1947, W; 1 male, Selma, July 10, 1947, W; 1 male, Woodlake, July 28, 1947, W; 1 female, Hanford, July 8, 1947. In Darby: 5 males, 1 female, Rio Linda, July 24, Oct. 7, 1957, D; 1 female, July 25, 1956; 1 male, Aug. 4, 1958, Davis, D. In UC, Davis: 2 females, Vacaville, July 27, 1948, M.

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